

Newark - Division of Water

ANNUAL REPORT

OF THE

BUREAU OF DISTRIBUTION

(DIVISION OF WATER)

1930

ANNUAL REPORT

Mr. James F. Costello, OFFICE OF THE
Department of Public Affairs
Newark, New Jersey

BUREAU OF DISTRIBUTION

Dear Sir:

The annual (DIVISION OF WATER) Bureau of the
Division of Water is herewith submitted.

Respectfully,

Hermann Rosentrater,

Division Engineer.

3-inch,

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mately 528.35 miles on the

Division of Water

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(DIVISION OF WATER)

Mr. Hermann Rosentreter, Division Engineer,
Division of Water, Department of Public Affairs,
Newark, New Jersey

Mr. James W. Costello, Chief Engineer
Department of Public Affairs
Newark, New Jersey

Dear Sir:

The annual report of the various Bureaus of the
Division of Water is herewith submitted.

WATER SUPPLY

During the year 1930 the average daily draft of water from
the Passaic and the Manasquan Supply Reservoirs was 10.5 million gallons, of
which 7.5 million gallons were delivered to other municipalities.

Respectfully,

Commencing July 5th water from the Passaic Reservoir was
supplied to the City Distribution System through the two 30-inch
connections between the 74-inch Manasquan conduit and the 60-inch
steel conduit located on the Belleville Reservoir grounds.

The 60-inch steel conduit from the southerly end of Branch
Brook Park to the Elizabeth City Line at Ludlow Street, a distance
of 15,000 feet, the contract for which was let late in 1929, was
completed in October. The amount of this contract was \$982,143.00

DISTRIBUTION SYSTEM

The total length of pipe owned by the city is now approxi-
mately 528.35 miles on the low pressure system and about 26.87 miles

on the high pressure system. Connected with the mains on the low pressure system are 4,212 fire hydrants and 377 on the high pressure system; 7,814 gates control the flow of water in mains on the low

**ANNUAL REPORT
OF THE
BUREAU OF DISTRIBUTION
(DIVISION OF WATER)**

Mr. Hermann Rosentreter, Division Engineer,
Division of Water, Department of Public Affairs
Newark, New Jersey

Dear Sir:

The annual report of the Bureau of Distribution for 1930 is herewith submitted; the reports of the Bureau of Inspection and of the Meter Laboratory are embodied in this report.

WATER SUPPLY

During the year 1930 the average daily draft of water from the Pequannock and the Wanaque Supply was 57.7 million gallons, of which 7.7 million gallons were delivered to other municipalities.

Commencing July 5th water from the Wanaque Reservoir was supplied to the City Distribution System through the two 30-inch connections between the 74-inch Wanaque conduit and the 60-inch steel conduit located on the Belleville Reservoir grounds.

The 60-inch steel conduit from the southerly end of Branch Brook Park to the Elizabeth City Line at Ludlow Street, a distance of 25,000 feet, the contract for which was let late in 1929, was completed in October. The amount of this contract was \$982,140.00

DISTRIBUTION SYSTEM

The total length of pipe owned by the city is now approximately 528.35 miles on the low pressure system and about 26.87 miles

on the high pressure system. Connected with the mains on the low pressure system are 4,212 fire hydrants and 377 on the high pressure system; 7,814 gates control the flow of water in mains on the low pressure system and 225 gates on the high pressure system. There are about 71,843 connections, known as services, of which 58,820 are in use, through which water for domestic, commercial and public use is drawn. There are 294 connections on the high pressure system, of which 255 are in use. The average pressure on the low pressure system varies from 25 to 75 pounds, and on the high pressure system from 100 to 160 pounds per square inch.

STREET MAIN EXTENSION, LOW PRESSURE SYSTEM

The total extension to street mains in the city during the year 1930 was as follows:

45,290 lineal feet = $8 \frac{3,050}{5,280}$ miles of from 4" to 60" diameter.

The amount of work done in relaying was as follows:

26,677 lineal feet = $5 \frac{277}{5,280}$ miles of from 6" to 20" diameter.

The approximate mileage of pipe of different diameters, deducting old pipe which were taken out and adding new pipes of large size in place of the old pipe removed, consists of 2,789,706 lineal feet or 528 - 1,866/5,280 miles.

The number of low pressure taps made during the year was 428. Of these 283 of 1-inch diameter, 28 of 1-1/2 inch, 52 of 2-inch, 7 of 3-inch, 27 of 4-inch and 31 of 6-inch.

The total number of low pressure taps in the city at the first of January, 1931 was 71,843, while the number of taps in actual use was 58,820.

The difference shows the services to vacant lots installed in advance of new pavements.

During the year 184 hydrants were set. Of these 109 were substituted in place of old hydrants and 75 were added to the number already in place, 10 taken out and not replaced, making the total number of hydrants:

In the City.....4,164

Silver Lake Section and Belleville Reservoir.... 48

4,212

STREET MAIN EXTENSION, HIGH PRESSURE SYSTEM

The extension of high pressure mains during the year 1930 was as follows:

625 lineal feet = $0 \frac{625}{5,280}$ miles of from 12" to 20" diameter.

The approximate mileage of high pressure pipe of different diameters up to December 31, 1930 was as follows:

141,885 lineal feet = $26 \frac{4,605}{5,280}$ miles.

Three new hydrants were connected with this high pressure system during the year, making a total of 377 high pressure hydrants up to December 31, 1930.

The number of high pressure taps made during the year was 10.

The total number of high pressure taps in the city at the 1st of January, 1931 was 294, while the number of taps in actual use was 255. The difference shows the services to vacant lots installed in advance of new improvement.

CONSUMPTION

The total amount of water diverted from the Pequannock Watershed during the year was 18,541.7 million gallons, also 2,676.1 million gallons was received from the Wanaque Watershed, which is an average daily of 57.7 million gallons. This is 1.4 million gallons less than the consumption of

CONSUMPTION STATEMENT FOR YEAR ENDING DECEMBER 31, 1930.

1929. The average daily consumption in the City of Newark was 50.0 million gallons.

During 1930, 25 breaks on mains and 583 leaks on services were repaired. 1,263 poor pressures were investigated, 2,034 leaks were investigated and 535 services cleaned out.

The use of hydrants by authorized and illegal users throws a heavy burden on the repair forces of the Division. In view of the fact that in 1930, 1,325 repairs of all kinds were made to hydrants (out of a total of 4,212) it might be advisable to install special standpipes for the use of the street flushers.

January	1746.1	56.3	1450.7	46.3	33.9	3.15
February	1600.2	57.2	1323.0	47.3	35.1	2.79
March	1734.8	55.9	1457.5	47.0	40.1	3.15
April	1694.4	56.3	1452.9	48.4	48.7	2.67
May	1801.0	58.1	1553.1	50.1	64.2	3.37
June	1805.3	60.5	1505.1	50.2	72.9	3.40
July	1923.0	62.0	1701.9	54.9	73.8	2.97
August	1954.2	63.0	1733.0	59.9	74.1	2.85
September	1809.9	60.3	1623.5	54.1	70.1	2.02
October	1795.3	57.9	1602.8	51.7	64.8	1.36
November	1583.7	52.8	1411.3	47.0	44.4	5.89
December	1590.8	51.3	1426.7	46.0	34.1	4.70
Total	21078.9	691.8	18241.5	599.4	646.2	38.32
Average		57.7		50.9	53.9	

1-21-31 Population of Newark, Dec. 31, 1930 by Board of Health, according to U.S. Census - Aug. 1930 - - - 445,000.

2-10-31 Town of Belleville - Population - Dec. 31, 1930 - - 26,979.

CONSUMPTION STATEMENT FOR YEAR ENDING DECEMBER 31, 1930.

1930	Total Consumption per Month, Million Gallons, Newark, Elizabeth, Bloomfield, Belleville, Glen Ridge, Kearny, Montclair, Nutley, Cedar Grove.	Average Daily Consumption, Million Gallons, Newark and Suburbs.	Total Consumption per Month - Million Gallons Newark.	Average Daily Consumption, Million Gallons, Newark.	Average Temperature Newark.	Rainfall, Inches, Newark.
MONTH						
January	1746.1	56.3	1450.7	46.8	33.9	3.15
February	1600.2	57.2	1323.0	47.3	35.1	2.79
March	1734.8	55.9	1457.5	47.0	40.1	3.15
April	1694.4	56.5	1452.9	48.4	48.7	2.67
May	1801.0	58.1	1553.1	50.1	64.2	3.37
June	1805.3	60.5	1505.1	50.2	72.9	3.40
July	1923.0	62.0	1701.9	54.9	73.8	2.97
August	1954.2	63.0	1733.0	55.9	74.1	2.85
September	1809.9	60.3	1623.5	54.1	70.1	2.02
October	1795.5	57.9	1602.8	51.7	54.8	1.36
November	1583.7	52.8	1411.3	47.0	44.4	5.89
December	1590.8	51.3	1426.7	46.0	34.1	4.70
Total	21038.9	691.8	18241.5	599.4	646.2	38.32
Average		57.7		50.0	53.9	

1-21-31 Population of Newark, Dec. 31, 1930 by Board of Health, according to U.S. Census - Aug. 1930 - - - - 440,000.

2-10-31 Town of Belleville - Population - Dec. 31, 1930 - - 26,979.

DIVISION OF WATER

Mr. Arthur R. Stemmler of the Bureau of Inspection reports that the men of his Bureau performed the following work during the year:

Meter Inspections	4,148
Service Inspections	1,714
Special Investigations	6,618
Special Meter Readings	3,015
Searches	381
Surveys	791
By-Passes Locked	251

Twenty-four meters supplying other municipalities are read weekly by the Bureau of Inspection. In addition to the above special effort was made to locate cross connections between the city supply and private systems. Fifty-two cross connections were found and removed.

Mr. James Woolley of the Meter Laboratory reports that there were 56,750 meters of various makes in service on December 31, 1929, ranging in size from 1/2-inch to 16-inch. Of the meters removed to the laboratory 796 were found damaged by frost, 3,084 meters found stuck, 313 found damaged by excessive heat, 329 meters for test at laboratory, 624 meters were tested or repaired and tested on the premises and special work totaling 5,602 calls were attended to in the field. Total number of meters December 31, 1930, 57,189.

STATISTICS REGARDING DISTRIBUTION SYSTEM

Respectfully submitted,

ROBERT O. SCHOLZ

ENGINEER IN CHARGE.

Kind of pipe	Cast iron and steel
Size from	1/2-inch to 60-inch
Extended	1,637 feet during year
Discontinued	1,637 feet
Total now in use	523-1886/5,280 miles
Number of hydrants added during the year	75
Number of hydrants discontinued during the year	10
Number of public hydrants now in use	4,212
Number of stop gates added during the year	109
Number of stop gates now in use	7,614
Range of pressure on distributing mains	25 to 75 lbs.

DIVISION OF WATER

SUMMARY OF STATISTICS OF THE NEWARK

NEW JERSEY, WATER WORKS

For Year Ending December 31, 1930.

Population by census 1930	440,000
Year of construction.....	1889-1891
Water owned.....	City of Newark
Source of supply.....	Pequannock and Wanaque Watersheds
Mode of supply.....	Gravity

STATISTICS OF CONSUMPTION OF WATER

Population, City of Newark.....	440,000
Consumption for the year, City of Newark.....	18,241.5 m.g.
Consumption for the year, Town of Belleville.....	732.9 m.g.
Consumption for the year, Portion of Bloomfield.....	672.7 m.g.
Consumption for the year, Town of Elizabeth.....	244.6 m.g.
Consumption for the year, Town of Glen Ridge.....	179.4 m.g.
Consumption for the year, City of East Orange.....	15.5 m.g.
Consumption for the year, Town of Montclair.....	552.8 m.g.
Consumption for the year, Town of Nutley.....	399.5 m.g.

Total consumption for the year/.....21,038.9 m.g.

Water passed through meters in the city.....	15,377.85 m.g.
Percentage of consumption metered in the city.....	84.30 %
Average daily consumption, city and suburbs.....	57.7 m.g.
Average daily consumption in the city.....	50.0 m.g.
Gallons per day to each inhabitant in the city.....	113.64
Gallons per day to each tap in use in the city.....	846.38
Cost of supplying water per million gallons figured on total maintenance.....	\$78.25
Total cost of supplying water per million gallons figured on total maintenance, plus interest on bonds.....	\$110.07

STATISTICS REGARDING DISTRIBUTION SYSTEM

Mains, Low Water Pressure

Kind of pipe.....	Cast iron and steel
Size from.....	4-inch to 60-inch
Length added.....	45,290 feet during year
Length discontinued.....	1,637 feet
Length now in use.....	528-1866/5,280 miles
Number of hydrants added during the year.....	75
Number of hydrants discontinued during the year.....	10
Number of public hydrants now in use.....	4,212
Number of stop gates added during the year.....	109
Number of stop gates now in use.....	7,814
Range of pressure on distributing mains.....	25 to 75 lbs.

Mains, High Pressure System.

Kind of pipe.....	Cast Iron
Sizes from	6-inch to 30-inch
Extended.....	625 feet during year
Discontinued.....	None
Total now in use	26-4,605/5,280 miles
Number of hydrants added during the year.....	3
Number of public hydrants now in use.....	377
Number of stop gates added during the year.....	3
Number of stop gates now in use.....	225
Range of pressure on high pressure system.....	100 to 160 lbs.

Services, Low Pressure System.

Kind of Pipe	Lead and cast iron
Sizes	5/8-inch to 6-inch
Number of service taps added during the year (5/8-inch to 6-inch diameter).....	220
Number of service taps abandoned during the year (5/8-inch to 6-inch diameter).....	103
Number of services in city.....	71,843
Number of service taps now in use (5/8-inch to 6-inch diameter).....	58,820
Number of meters added.....	437
Revised list of meters now in use	57,077
Percentage of services in use metered.....	97.04 %

Connections, High Pressure System.

Kind of pipe.....	Cast Iron
Sizes.....	1-1/2-inch to 6-inch
Number of connections added during the year.....	10
Number of connections in city.....	294
Number of connections in use (1-1/2-inch to 6-inch).....	255
Number of meters added.....	2
Revised list of meters now in use.....	112
Percentage of connections in use metered.....	43.92 %

ANNUAL REPORT

C H E M I S T

ANNUAL REPORT
OF THE
CHEMIST
(DIVISION OF WATER)

Herrmann Rosentreter, Division Engineer,
Division of Water, Department of Public Affairs,
Newark, New Jersey.

Dear Sir:

I herewith respectfully submit my annual report of the work done for the Division of Water during the year 1930.

The microscopical, bacteriological and chemical examinations of water were continued as in former years. The following number of samples from the various sources were examined:

<u>Source</u>	<u>Microscopical</u>	<u>Bacteriological</u>
Cedar Grove Reservoir	284	255
#1 and #2 Pipe Lines Great Notch	596	673
Upper & Lower Macopin Intake	74	62
Echo Lake Brook	67	51
Kanouse Brook	52	60
Clinton Brook	75	60
Oak Ridge Brook	70	58
Watchung Meter, Montclair	77	146
Venturi Meter, Upper Montclair	134	142
Echo Lake Reservoir	26	1
Clinton Reservoir	8	--
Oak Ridge Reservoir	3	--
Canistear Brook	2	1
Belleville Reservoir Inlet	4	15
Belleville Reservoir Outlet	19	41
Wanaque Supply at Belleville	124	123
Wanaque Supply at Reservoirs	28	37
Newark Taps	25	85
South Orange Ave. Outlet	1	6
Cotters Brook	1	9
Branch Brook Park-Eliz. Pipe Line	--	19
Miscellaneous Watershed		56
	<u>1670</u>	<u>1900</u>

MICROSCOPY

The microscopical examination of the water is undertaken, so as to detect

microorganism, which might affect the aesthetic quality of the water, as odor, taste or color.

On January 7th, the microorganism, Synura, appeared in Cedar Grove Reservoir. The amount of Synura increased so, that on January 14th it was necessary to treat the reservoir. After treatment with copper sulphate, the reservoir was again turned on, on January 18th.

On April 19th, treatment of Clinton Brook was begun with copper sulphate, due to the presence of Synura in the brook. The Synura made its appearance a few weeks previous but did not warrant treatment until the 19th. Treatment was discontinued on April 29th.

On April 19th, due to excess rain in the watershed, it became necessary to treat Oak Ridge Brook. The reservoir began to overflow sending down Synura, Dinobryon, Asterionella, Codonella and Tintinus in amounts which seriously affected the aesthetic quality of the water. Treatment with copper sulphate was continued until May 5th, when the reservoir ceased overflowing.

On June 27th, it became necessary to by-pass Cedar Grove Reservoir, and treat same with copper sulphate, due to the presence of Tabellaria. Tabellaria had been present for some time previous, but had now caused a turbidity and distinct grassy odor. The chlorine plant at Cedar Grove was shut off during treatment. By July 3rd, the tabellaria had disappeared and the reservoir and chlorine plant were again turned on.

On July 22nd, Echo Lake Reservoir, from which we had been drawing water, was ordered shut off. Anabaena, Dinobryon and Uroglena were found present in large quantities at the time.

On October 24th, and at intervals when it was found practical, until the end of the year we treated Echo Lake Brook. An effort was made to drain the lowlands of Echo Lake. Treatment was necessary with copper sulphate

to the large variety of microorganisms. The microorganisms were of a type and in a quantity sufficient to be detrimental to water.

On November 12th, due to the troublesome microorganism, Synura, Cedar Grove Reservoir was again bypassed and treated with copper sulphate. The Synura had disappeared by November 18th, when the reservoir was turned on.

BACTERIOLOGY

The systematic bacteriologic examination of the water from the various sources were made as formerly. The procedures of the American Public Health Association and the United States Public Health Service, supplemented by methods found better adapted to our own water supply, were followed in the laboratory. The latter methods serve for the purpose of checking the former.

Examinations of the various brooks, ponds and springs in the watershed were undertaken during July and August in order to trace pollution. It is hoped that recommendations made at the time are fulfilled in the coming year. The chlorine demand of the water, which has been increasing, can ^{then} be lowered, thus improving the aesthetic quality of the water.

During the year new sampling stations were established at Macopin Intake, Great Notch, Belleville Reservoir Outlet and South Orange Outlet. Daily bacteriological tests are made at these points, thus giving a closer check on all water coming from the watershed and entering the city distribution system.

The new pipe line from Branch Brook Park to the Elizabeth City Line was tested throughout its length and found to be free of pathogenic bacteria.

CHEMISTRY

A complete chemical analysis was made of the delivered water monthly. The samples were taken at the City Hall, Newark, N. J. and at the Venturi Meter, Montclair.

On September 19, 20 and 22nd, Hydrogen (P_H) Ion tests were made in sections of Newark. The tests being made so as to trace the flow of Wanaque water with Pequannock water within the city limits.

During the year, in addition to our regular chemical work, chemical analysis were made as follows: Bureau of Docks, 28; Division of Sewers, 23; Division of Water, 7.

PURIFICATION - CHLORINATION

New modern chlorine apparatus has been installed on both pipe lines at Macopin Intake. The new machines will prove of great value, in that prior to their installation, it was necessary to force the old ones to full capacity during a heavy runoff. Aside from this, the chlorine plant at Macopin Intake has been efficient, in assisting us to deliver water free from Pathogenic Bacteria.

Ortho-toliline tests are now made hourly on both pipe lines daily, to determine the excess free chlorine. These tests are made about 1500 feet below the point of application. A further check of the excess is made daily at Great Notch, after the water has traveled through about 17 miles of pipe line. In accordance with the recommendations of the State Board of Health, a higher excess than formerly is now maintained on both pipe lines.

On June 19th, the Cedar Grove Reservoir plant was started due to the bacteriological flora of the water. The chlorine was increased gradually until an excess of .09 p.p.m. was obtained at the Venturi Meter Montclair. The chlorine plant was kept in operation until November 13th, when the bacteriological condition of the water improved such, that chlorination was no longer necessary. During treatment of Cedar Grove Reservoir with copper sulphate the chlorine plant was likewise shut down. It is hoped that an improved modern chlorine plant be installed at Cedar Grove in the coming year.

The cleaning of Belleville Reservoir in August greatly improved the quality of the water delivered from this reservoir.

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The cleaning of Belleville Reservoir in August greatly improved the quality of the water delivered from this reservoir.

WANAQUE SUPPLY

On July 5th Wanaque supply was turned on. Daily Bacteriological, Microscopical and Physical tests are made of this water at the Newark-Kearny Meter House, Belleville. A weekly test is also made of the untreated water at the reservoir.

About September 20th, due to the low P_H Value or alkalinity of Wanaque water being delivered, it became necessary for the North Jersey Water Commission to add lime to the water. The lime increased the alkalinity and is still being used. It has improved the quality of the water.

At times the aesthetic quality of the water was objectionable. This will be overcome it is believed, when the sprayers are completed at Wanaque Reservoir.

Respectfully submitted,

Julius F.D. Bauermann

Assistant Bacteriologist & Chemist.

ANNUAL REPORT
OF THE
BUREAU OF WATER SUPPLY
(DIVISION OF WATER)

Mr. Hermann Rosentreter, Division Engineer
Division of Water, Department of Public Affairs
Newark, New Jersey

Dear Sir:

I herewith present the annual report of the Bureau of Water Supply for the year ending December 31, 1930:

ANNUAL REPORT
OF THE
BUREAU OF WATER SUPPLY
(DIVISION OF WATER)

Extensive improvement cutting of hardwood trees and the shipping to Newark of the lumber to be distributed free to the needy; the installation of the latest type chlorination system with adequate reserve supplies, the purchase of additional necessary property, intensive stream cleaning and close sanitary inspection were the high lights of the watershed for 1930. The preparation of some 150 acres of land to receive some 90,000 red pine trees developed in the watershed nurseries and the planting of some 20,000 red pines in the spring of this year together with the addition of five horses to the inspection system are worthy of report. The re-cutting of the reservoir shore lines, the cleaning of various brooks and the extensive work done on Kanawha Brook are among the other improvements.

SANITATION

Inspection of privately owned property, rigid enforcement of the rule closing all lavatories on trains while en route through the watershed, no exceptions but stipulated that necessary toilets and cesspools on privately owned property and a general inspection of the watershed was continued. All garbage and refuse in the watershed was collected by city

ANNUAL REPORT

OF THE

BUREAU OF WATER SUPPLY

(DIVISION OF WATER)

Mr. Hermann Rosentreter, Division Engineer
Division of Water, Department of Public Affairs
Newark, New Jersey

Dear Sir:

I herewith present the annual report of the Bureau of Water Supply for the year ending December 31, 1930:

IMPROVEMENTS

Extensive improvement cutting of hardwood trees and the shipping to Newark of the lumber to be distributed free to the needy; the installation of the latest type chlorination system with adequate reserve supplies, the purchase of additional necessary property, intensive stream cleaning and close sanitary inspection were the high lights of the watershed for 1930. The preparation of some 150 acres of land to receive some 90,000 red pine trees developed in the watershed nurseries and the planting of some 80,000 red pines in the spring of this year together with the addition of five horses to the inspection system are worthy of report. The re-cutting of the reservoir shore lines, the cleaning of various brooks and the intensive work done on Kanouse Brook are among the other improvements.

SANITATION

Inspection of privately owned property, rigid enforcement of the rule closing all lavatories on trains while en route through the watershed, construction at city expense of all necessary toilets and cesspools on privately owned property and a general inspection of the watershed was continued. All garbage and refuse in the watershed was collected by city

It will be noted that on the morning of May 4, mysterious fires started

trucks and all toilets and cesspools were cleaned. Plans for the further enlargement of the incinerating plant were made. The campaign to educate autoists to discontinue littering the highways with paper and other refuse thrown from cars was continued with some success. The roads were kept as clean as possible of this litter. The addition of the five horses to the inspection department is a step forward. In the outlying districts this will insure the covering of more territory not accessible to motorcycles or automobiles. The addition of the mounts permitted some sanitary re-zoning.

REST AREAS

The rest areas continue to be popular with crowds surpassing those of previous years. With the improvement of the highways and the improvement of connecting county roads the traffic in the watershed is becoming greater each year. The greatest care must be exercised to keep down vandalism.

AESTHETIC IMPROVEMENT

There has been much comment during the past on the sign and poster-free roads of the watershed area and the sign-defaced stretches of roads throughout other sections of north Jersey. The policy of allowing no signs, placards or posters in the watershed has been continued and the result is pleasant. The only signs in the watershed are neat posters setting forth the rules and warnings of the watershed and the placards on fire prevention issued by the State Department of Conservation and Development. The result is an object lesson to the State at large.

FORESTRY

Severe fire loss was suffered last spring. Some two thousand, three hundred acres, mostly mountain timber, was burned over. The fires started on the morning of May 4, and were under control on the night of May 8.

It will be noted that on the morning of May 4, mysterious fires started

all over New Jersey, from Sussex to Cape May Counties as well as in sections of New York and Pennsylvania. Most of the fires swept on the watershed with broad fronts and a thirty mile wind behind them. It is to the credit of the watershed personnel that every fire was stamped out in the watershed area after many of them had traveled miles without a check on outside property. The watershed personnel worked day and night. Crews of men from the Franklin mines of the American Zinc Company were sent to aid under the direction of William Bailey; boy scouts from Newton were sent as fighters and water carriers; the natives and the forces under the direction of Division Fire Warden LeRoy Fale all worked hard. Headquarters at Charlotteburg were threatened and the Macopin Fire Company and apparatus from Butler and Bloomingdale stood by. The State Troopers aided materially in rounding up men. The fires were kept out of all our coniferous tree plantations and run out, split and killed. The watershed supply of fire brooms, water cans and ample transportation was of general aid. The main loss was in red and rock oak.

One hundred and fifty acres of land were prepared to receive some 90,000 red pines that will be removed from the nurseries in the spring of 1931. One hundred and twenty-five thousand seedlings have been ordered for the nurseries for 1931.

The ground prepared is in the Oak Ridge section and in the area below the reservoirs. Fire lines were ploughed around the plantations.

WOOD CUTTING

Extra men were employed to make improvement cuttings and clean out the fire-destroyed trees; and the wood, by order of Mayor Congleton, was shipped to Newark by trucks and rail to relieve the situation among the poor. This greatly relieved the labor situation in this section and gave many laborers with families the only available opportunity to secure a job.